

ADOPTION OF IMPROVED CULTIVATION PRACTICES ON TOMATO IN EAST KHASI HILLS DISTRICT, MEGHALAYA, INDIA

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ABSTRACT

Tomato is one of the most important economical vegetable crops grown in the plains and hills of the north eastern region. This present study was conducted in Meghalaya, India. Meghalaya is one of the best tourist destinations amongst the 8 sister states of the North Eastern region of India. The Northeast region is mainly agrarian and mostly rural dwellers. In Meghalaya, it is widely cultivated in Umsning block-Nongpoh which can be grown both during kharif and rabi seasons but recently high altitude regions of East Khasi Hills district also practice tomato cultivation on a large scale and it has spread to different parts due to high return during the off-season. Owing to the popularity of tomato cultivation in the state, this study was conducted to understand the adoption level of improved practices by the tomato growers. Overall, the study concluded that the majority (73.33%) of the respondents had medium level of adoption, followed by 19.17 per cent of the respondents with high level of adoption and only 7.50 per cent of the respondents had low level of adoption towards improved practices of tomato cultivation.

KEYWORDS: Tomato, Improved Practices, Adoption, Meghalaya, Northeast, Recommended Practices.

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1. INTRODUCTION

Tomato is one of the cheapest and richest sources of protective foods providing essential nutrients like proteins, carbohydrates, minerals, salts and vitamins to the human body. Among vegetables, tomato ranks second in the world in priority after potato. Tomato ranks third in India in priority after potato and onion among vegetables ¹(Tinde *et al.*, 2018). As tomato is a short duration crop and has a high yielding capacity it is a major source of employment and income thereby increasing the cultivated area day by day. India is the second largest producer of tomatoes in the world with a total cultivated area of 760,000 ha with production 18,399,000 tonnes and productivity 24,209.2 kg/ha ²(Anonymous Atlasbig.com 2018-2020). There has been an increasing rate in the production of tomatoes from 18,732,000 during 2016 to 20,708,000 in 2017 but decrease to 19,377,000 during 2018 (FAO Statistical Database 2020).

North eastern region of India comprises of eight states namely, Meghalaya, Assam, Mizoram, Manipur, Nagaland, Arunachal Pradesh, Tripura and Sikkim. Tomato is one of the most important economical vegetable crops grown in the plains and hills of north eastern region. It grows well in north eastern India as it can adapt to a wide range of climate and soil condition.

Tomato is one of the most important crops in India almost grown in every state and Meghalaya is also one

of the states in which tomato is grown commercially which has a tremendous impact in the income of the farmers. In Meghalaya, it is widely cultivated in Umsning block-Nongpoh which can be grown both during kharif and rabi seasons but recently high altitude regions of East Khasi Hills district also practice tomato cultivation on large scale and it has spread to different parts due to high return during the off-season. The farmers in East Khasi Hills District have the potential to be economically strengthened through tomato cultivation. According to the Horticultural Statistic 2017, the cultivated area and production under tomato in Meghalaya during 2014-15 was 2.20ha and 52 million tonnes, 2015-16 was 2.15ha and 34.02 million tonnes and 2016-17 was 2.12 ha and 33.95 million tonnes, ³(Horticultural Statistics at a Glance, 2017).

2. OBJECTIVE: TO EXAMINE THE ADOPTION LEVEL OF IMPROVED CULTIVATION PRACTICES OF TOMATO

3. RESEARCH METHODOLOGY:

The study was conducted in two blocks i.e, Mawryngkneng and Myllem of East Khasi Hills, Meghalaya state, India. 3 villages from each two blocks making a total number of 6 villages were selected randomly from which, a list of all households engaged in tomato cultivation with beneficiaries having varying experiences from the selected villages was prepared. 20 farmers were selected randomly from each village so as to make a sample size of 120 respondents.

4. LITERATURE REVIEW

⁴Singh *et al.* (2011) in their study conducted in Jabalpur district of Madhya Pradesh on Adoption Behaviour of Vegetable Growers towards Improved Technology revealed that adoption level of improved tomato cultivation technologies varies from medium to a high level of adoption.

⁵Singh and Narain (2014) conducted a study in Indore district, Madhya Pradesh found out that cultural practices were more adopted by tomato growers whereas other IPM practices like mechanical, biological and use of pesticide were either poorly adopted or not adopted due to lack of knowledge or skill or other factors.

⁶Yadav and Tripathi (2017) studied on productivity enhancement in tomato through integrated crop management in Sagar district of Madhya Pradesh revealed that adoption of IPM practices reduced the population of fruit borer of tomato by 66 per cent and increased in yield of tomato by 39.5 per cent.

⁷Singh *et al.* (2018) studied on yield gap analysis, economics, adoption and horizontal spread of tomato cultivation through front line demonstration in Seoni district of Madhya Pradesh found out that the overall adoption level of tomato production technology was increased due to Front Line Demonstration (FLD) by KVK Seoni.

5. RESULTS AND DISCUSSION

5.1 Adoption Level of Improved Cultivation Practices of Tomato

Table 5.1 Adoption Level of the Respondents towards Tomato Cultivation

Sl. No.	Practices	Level of Adoption					
		Full		Partial		Never	
		F	P	F	P	F	P
1.	Cultivars	0	0.00	19	15.83	101	84.17
2.	Propagation method	0	0.00	120	100.00	0	0.00
3.	Time of planting	108	90.00	12	10.00	0	0.00
4.	Spacing	0	0.00	104	86.67	16	13.33
5.	Method of planting	120	100.00	0	0.00	0	0.00
6.	Manuring/Fertilization	0	0.00	120	100.00	0	0.00
7.	Earthing	73	60.83	47	39.17	0	0.00
8.	Weeding	95	79.17	25	20.83	0	0.00
9.	Crop Rotation	0	0.00	48	40.00	72	60.00
10.	IRRIGATION MGT	0	0.00	0	0.00	120	100.00
11.	DISEASE MGT	0	0.00	120	100.00	0	0.00
12.	PEST MGT	0	0.00	33	27.50	87	72.50
13.	Intercultural Operation	0	0.00	18	15.00	102	85.00
14.	Method/time of harvesting	16	13.33	104	86.67	0	0.00
15.	STORAGE METHOD	0	0.00	120	100.00	0	0.00
16.	PROCESSING METHOD	0	0.00	0	0.00	120	100.00

Table 5.1 shows the Adoption level of the respondents with respect to the recommended practices of tomato cultivation. The following points illustrate the finding regarding tomato cultivation.

1. Cultivars

According to the table above it was found that 15.83 per cent of the respondents had adopted recommended varieties partially while most (84.17%) of the respondents had never adopted the recommended varieties. The main causes in which the majority of the respondents had not adopted any recommended varieties is that farmers have less knowledge about tomato cultivation due to less training attended and less contact with the extension agent.

2. Propagation Method

It was found that 100 per cent of the respondents had partially adopted the recommended propagation method. The reason behind this is due to the dissemination of information which was found to be high in informal sources of information.

3. Time of Planting

It was found that 90 per cent of the respondents had fully adopted the recommended planting time of tomato. It was found that 10 per cent of the respondents had partially adopted the recommended planting time because the respondents in warm climates instead of growing 4 times a year they grow only 3 times since they did not follow the recommended sowing time.

4. Spacing

It was found that the majority (86.67%) of the respondents had partially adopted the recommended spacing while 13.33 per cent of the respondents had never adopted the recommended spacing because they wanted to do it according to their convenience. The reason behind this is that majority of the farmers adopted the spacing which is similar to the

recommended one whereas a few of them adopted spacing that is totally different from the recommended one.

5. Method of Planting

It was found that 100 per cent of the respondents had fully adopted the recommended planting method. It shows that the respondents first sow the seedlings in the nursery bed and then transplant the seedlings to the main field. Thus all of the respondents follow recommended planting method.

6. Manuring / Fertilization

It was found that 100 per cent of the respondents had adopted the recommended manuring or fertilization partially. This is because the respondents had not acquired proper knowledge about improved practices of manuring and fertilization due to a lack of training.

7. Earthing

It was found that the majority (60.83%) of the respondents had fully adopted the recommended 'earthing while 39.17 per cent of the respondents had adopted the recommended earthing partially. This is because most of the respondents had performed the earthing twice as recommended while some of the respondents performed the earthing only once.

8. Weeding

It was found that the majority (79.17%) of the respondents had adopted the recommended weeding fully while 20.83 per cent of the respondents had partially adopted the recommended weeding. The reason is that few respondents still adopted partially because weeding is done as per their requirement and convenience.

9. Crop Rotation

It was found that 40 per cent of the respondents had adopted the crop rotation partially while the majority (60%) of the respondents had not adopted the crop rotation. The reason behind this is that the respondents lack the knowledge about the advantages related to crop rotation due to a lack of training and relevant information.

10. Irrigation Management

It was found that 100 per cent of the respondents had not adopted any irrigation management. The reason is that the study area has the highest annual rainfall thus no irrigation is required and they totally depend on rainfall for their crops.

11. Disease Management

It was found that 100 per cent of the respondents had partially adopted the recommended disease management. The reason why the farmers adopted partially is due to a lack of knowledge about the dosage of insecticides required for the crops.

12. Pest Management

It was found that 27.50 per cent of the respondents had partially adopted the recommended pest management while most (72.50%) of the respondents had not adopted the recommended pest management. This is because most of the respondents lack the knowledge about pest management while some of the respondents adopted it partially because they knew their management but lack information about the dosage of pesticides.

13. Intercultural Operation

It was found that 15 per cent of the respondents had partially adopted the recommended intercultural operation while most (85%) of the respondents had not adopted the recommended intercultural operation. The reason is that few farmers adopted weeding and earthing as recommended as well as application of urea similar to the recommended practice but the majority of the farmers adopted weeding, earthing and application of urea as per their convenience, as well as no irrigation, has taken place which shows that it is totally different from the recommended one. This could be due to a lack of knowledge and information about the benefits of such practices.

14. Method & Time of Harvesting

It was found that 13.33 per cent of the respondents had adopted the recommended method and time of harvesting fully while 86.67 per cent of the respondents had partially adopted the recommended method and time of harvesting. The reason behind this is that few respondents harvest the crop before it is ripe as well as in morning and evening hours whereas the majority of the respondents harvest the crop before it is ripe at any time in a day as per their convenience.

15. Storage Method

It was found that 100 per cent of the respondents had partially adopted the recommended storage method. The reason why the farmers had adopted partially is due to lack of knowledge about improved storage method or even if they knew about it, they cannot afford to implement such storage as the expenditure is very high.

16. Processing Method

It was found that 100 per cent of the respondents had not adopted any processing facility as they lack the knowledge about processing methods.

5.2 Overall Status of Adoption level of Tomato Growers

Table 5.2 Distribution of Respondents based on Overall Adoption level of Tomato Growers

Sl. No	Category	Frequency	Percentage
1	Low(<12.83)	9	7.50
2	Medium(12.83-15.74)	88	73.33
3	High (>15.74)	23	19.17

Table 5.2 shows that the majority (73.33%) of the respondents had medium level of adoption, followed by 19.17 per cent of the respondents had high level of adoption and only 7.50 per cent of the respondents had low level of adoption towards tomato cultivation.

6. CONCLUSIONS

The findings revealed that as per the recommended practices of Tomato cultivation given by the Department of Agriculture, Shillong, Meghalaya, improved activities like the Planting method (100%), planting time (90%), weeding (79%) and earthing (60%) were fully adopted by the respondents as per the percentage of adoption given in each bracket respectively. It was found that 100% had partially adopted recommended activities like propagation method, manuring, disease management and storage. The findings revealed that 100 per cent of the respondents had not adopted any irrigation management and processing facility and 80 per cent of the respondents had not adopted intercultural operation and more than 60 per cent had never adopted recommended activities like varieties, pest management and crop rotation.

Overall, the study concluded that the majority (73.33%) of the respondents had medium level of adoption, followed by 19.17 per cent of the respondents with high level of adoption and only 7.50 per cent of the respondents had low level of adoption towards improved practices of tomato cultivation.

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